REMARKS

This is in full and timely response to the Office Action dated August 10, 2005. Reexamination in light of the following remarks is respectfully requested.

Claims 1-18 and 20-21 are currently pending in this application, with claims 1, 20, and 21 being independent. *No new matter has been added.*

Entry of amendment

This amendment *prima facie* places the case in condition for allowance. Alternatively, it places this case in better condition for appeal. Accordingly, entry of this amendment is respectfully requested.

Prematureness

Applicant, seeking review of the *prematureness* of the final rejection within the Final Office Action, respectfully requests reconsideration of the finality of the Office action for the reasons set forth hereinbelow. See M.P.E.P. §706.07(c).

At least for the following reasons, if the allowance of the claims is not forthcoming at the very least and a new ground of rejection made, then a *new non-final Office Action* is respectfully requested.

Rejection of the claims

Paragraph 2 of the Office Action includes a rejection of claims 1-4 and 6-21 under 35 U.S.C. §102 as allegedly being anticipated by U.S. Patent No. 6,373,817 to Kung et al. (Kung).

Paragraph 4 of the Office Action includes a rejection of claim 5 under 35 U.S.C. §103 as allegedly being unpatentable over Kung in view of U.S. Patent No. 6,397,167 to Skinner et al. (Skinner).

This rejection is traversed at least for the following reasons.

Claim 1 is drawn to an apparatus comprising:

a software program application which enables a user to specify e-mail filter criteria and a notification icon which then retains and stores said e-mail filter criteria and said notification icon;

a querying module contained within said software program application which queries· said e-mail server to determine whether e-mail fulfilling said e-mail filter criteria has arrived at said e-mail server; and

a notifying module also contained within said software program application,

wherein, upon arrival of an e-mail fulfilling said e-mail filter criteria, said software program application notifies the user by posting said notification icon to the set top box.

Kung arguably teaches a *broadband residential gateway 300* and an *IP central station 200* (Kung at Figure 1).

Kung arguably teaches that the broadband residential gateway 300 may be variously configured to provide functionality to one or more TVs (using, for example, either an integrated or separate decoder functionality, for example, *set top box 350*) (Kung at Figure 3, column 19, lines 9 and 13-15).

Kung arguably teaches that the *IP central station 200* may include a *multimedia server 222* (Kung at column 7, line 1 to column 8, line 6).

Kung arguably teaches that each server in the *IP central station 200* may include computer(s), storage device(s), and *specialized software* for implementing particular predefined functions associated with each server (Kung at column 8, lines 13-16).

Kung arguably teaches that the *multimedia server 222* may be configured to support *e-mail* (for example, html) messages (Kung at column 13, lines 10-12).

However, Kung fails to disclose, teach, or suggest that upon arrival of an e-mail fulfilling an e-mail filter criteria, a software program application *notifies the user by posting the notification icon to the set top box 350.*

The Office Action refers to processors P1-P6 of Kung (Office Action at page 2).

In this regard, Kung arguably teaches that where the distributed processing controller 306 includes one or more distributed processing modules, the modules may include a telephony processing module (P1) 308, data processing module (P2) 310, video processing module (P3) 312, auxiliary processing module (P4) 314, IP processing module (P5) 316, and/or an operations administration maintenance and provisioning processing module (P6) 318 interconnected through one or more busses such as processor bus 380 (Kung at Figure 3, column 20, lines 14-23).

Yet, Kung fails to disclose, teach, or suggest any of the processors P1-P6 as being associated with the set top box 350 (Kung at Figure 3). Thus, Kung fails to disclose, teach, or suggest any of the processors P1-P6 as having a software program application that *notifies the user by posting the notification icon to the set top box 350.*

Figure 5 of Kung arguably teaches an exemplary call processing sequence for *an on-net call* (for example, an IP based call) to *an off-net call* (for example, a public switched telephone network based call), in which the off-net party initiates the drop call sequence (Kung at column 28, lines 30-36).

However, Figure 5 of Kung fails to disclose, teach, or suggest that upon arrival of an e-mail fulfilling an e-mail filter criteria, a software program application *notifies the user by posting the notification icon to the set top box 350.*

The Office Action contends that Figures 7a, 8 and 10 of Kung teach a software program for allowing the user to define and set up a calling schedule for himself/herself or a calling preference in filtering e-mail or message intended for him/her and for the server to know whether to retain and store the message (Office Action at page 3).

In response to this contention, Kung arguably teaches that Figure 7(a) is a representative screen portion whereby a user may select and/or the screen portion may display a chase me schedule. In the depicted embodiment, a user is provided with an opportunity to identify an Address for an IP or telephone communication and details of a schedule for receiving communications at that address (Kung at column 34, lines 20-25).

However, Figure 7(a) of Kung fails to disclose, teach, or suggest that upon arrival of an e-mail fulfilling an e-mail filter criteria, a software program application *notifies the user by posting the notification icon to the set top box 350.*

Kung arguably teaches that Figure 8 is one embodiment of a screen or a screen portion for displaying actual and alternative calling party preference data for a given communication to a first called party or user which may be a part of a call set-up screen or a terminal configuration screen that is stored on a user's SIM card or in BRG or Central Station memory (Kung at column 35, lines 28-33).

However, Figure 8 of Kung fails to disclose, teach, or suggest that upon arrival of an e-mail fulfilling an e-mail filter criteria, a software program application *notifies the user by posting the notification icon to the set top box 350.*

Kung arguably teaches that a table indicating the preference levels and exemplary instruction sets is shown in Figure 10 (Kung at column 35, lines 44-45).

However, Figure 10 of Kung fails to disclose, teach, or suggest that upon arrival of an e-mail fulfilling an e-mail filter criteria, a software program application *notifies the user by posting the notification icon to the set top box 350.*

Skinner has been provided in the Office Action for the features that are deficient from within Kung.

Skinner arguably teaches a time and activity tracker with a hardware abstraction layer. Skinner arguably teaches the addition of the hardware abstraction layer 101 provides the capability of monitoring, i.e., detecting, activities of multiple types of input devices, such as remote controls for TV *set top boxes* (Skinner at column 8, lines 21-24).

However, Skinner fails to disclose, teach, or suggest that upon arrival of an e-mail fulfilling an e-mail filter criteria, a software program application *notifies the user by posting the notification icon to a set top box.*

Claim 20 is drawn to an e-mail filtering and notification apparatus, comprising:

set top box, connected between a TV content provider, an Internet provider having an e-mail server, and a TV;

user-input means for allowing a user to specify e-mail filter criteria and a notification icon;

retaining and storing means for retaining and storing said criteria and said notification icon;

querying means, for querying said e-mail server to determine whether e-mail fulfilling said user criteria has arrived at said e-mail server; and

notification means for notifying the user of said arrival by posting said notification icon to the Set Top Box,

wherein said notification icon relates to the subject matter of said arriving e-mail.

At least for the reasons provided hereinabove with respect to claim 1, Kung and Skinner, either individually or as a whole, fails to disclose, teach or suggest *notification means for notifying the user of said arrival by posting said notification icon to the Set Top Box.*

Claim 21 is drawn to a computer readable medium comprising:

a software program application that enables a user to specify e-mail filter criteria and a notification icon which then retains and stores said e-mail filter criteria and said notification icon;

a querying module that queries said e-mail server to determine whether e-mail fulfilling said e-mail filter criteria has arrived at said e-mail server; and

a notifying module wherein, upon arrival of an e-mail fulfilling said criteria, said software program application notifies the user by posting said notification icon to the set top box.

At least for the reasons provided hereinabove with respect to claim 1, Kung and Skinner, either individually or as a whole, fails to disclose, teach or suggest that *upon arrival of an e-mail fulfilling said criteria, said software program application notifies the user by posting said notification icon to the set top box.*

Withdrawal of these rejections and allowance of the claims is respectfully requested.

Conclusion

For the foregoing reasons, all the claims now pending in the present application are allowable, and the present application is in condition for allowance. Accordingly, favorable reexamination and reconsideration of the application in light of the amendments and remarks is courteously solicited.

If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone Brian K. Dutton, Reg. No. 47,255, at 202-955-8753.

If any fee is required or any overpayment made, the Commissioner is hereby authorized to charge the fee or credit the overpayment to Deposit Account # 18-0013.

Dated: October 20, 2005   Respectfully submitted,

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TITLE OF THE INVENTION

Method and Apparatus for Notifying Users of Filtered E-Mail using a Set Top Box.

FIELD OF THE INVENTION

The present invention relates to the field of set top boxes (STBs). More particularly, the invention relates to STBs working with e-mail servers to provide notification to users of the arrival of selected e-mails.

BACKGROUND OF THE INVENTION

Fig. 1 is a representative block diagram of a conventional cable television (TV) system. A set top box (STB) 10 contains electronic equipment that is used to connect a subscriber's TV 12, and potentially other video electronic equipment, with a TV content provider 14. An STB 10 is essentially a rudimentary computer without floppy disc or CD ROM drives that is programmed to process programming and potentially other services from a provider 14. As shown in Fig. 1, STBs can be connected to a TV provider 14 via cable modem 16, satellite 18, or even broadcast antennae 20. Presently, the highest percentage of STBs 10 are connected to cable TV providers 14 through a coaxial wall outlet.

Services provided by a TV provider 14 typically include access to a number of TV channels and sometimes an electronic program guide. Additional premium channels may also be provided to subscribers at an additional fee. Pay-per-view events and video-on-demand may also be supplied by the TV provider 14. The STB 10 is programmed to furnish these and other services to the subscriber.

However, some TV providers also offer Internet access and e-mail accounts. Many different combinations of TV programming, web access, and e-mail services are commercially available.

One such combination of TV programming and web/e-mail access is shown in Fig. 2. Accessing such a service from the Internet Service Provider (ISP) 15 requires a STB 10, a conventional TV 12 to connect the STB 10, and a telephone line to sign up and access the service. As shown in Fig. 2, such an arrangement also includes a wireless keyboard 22 of the typical computer QWERTY style, an ordinary wireless remote controller 24 (24) like that found with a TV 12, and a 56K modem 26. The keyboard 22 can be used by the user during operation of the STB 10. However, a substantial portion of the user-selectable options do not require use of the keyboard 22, and can be accomplished using the ordinary remote controller 24. The keyboard 22 is essential in setting up the STB 10 and selecting various options, but might go unused for long periods of time after set up. Also, during set-up, the TV 12 screen can show a display of a keyboard through which a user can designate letters using the ordinary remote controller 24.

When setting up the STB 10 and ISP 15 connections for the first time, users are asked a few questions so that the ISP can then detect the TV programming received from their local cable, broadcast, or satellite TV provider 14. However, the combination of TV programming and web/e-mail access from the ISP 15 does not replace these types of TV programming, but is an additional online service that is intended to enhance the television viewing experience, not supplant it. For example, a STB user can compete in real time with the contestants appearing on the quiz shows, and can have his or her score continually updated on a portion of the TV screen 12. The user can also compare the score with the scores of other STB quiz show players. Similarly, viewers of professional sports games can obtain detailed player statistics far beyond what is displayed by the TV network.

An additional Internet utility available using STBs is Instant Messaging, where

messages from selected users can be displayed directly on the TV 12 connected to the STB 10. Another feature of Instant Messaging is that it allows users to control who can see when they are online and who can send them messages. However, these messages are not in a typical Internet e-mail format, and are only filterable to the extent that a user can add or delete persons from their "buddylist", or list of other people capable of sending instant messages. Also, if the Instant Messaging software application 28 is not enabled, a user will not know that another person is attempting to contact that user via Instant Messaging.

As stated, STB users can have a wide range of online content to choose from. However, no provision is made for preempting the STB video data to signify the arrival and priority of a traditional Internet e-mail 32. During the operation of an STB 10, the TV content normally owns the entire screen, and is not pre-emptive ~~pre-emptible~~ without user interaction. Thus, the screen area belonging to the TV 12 looks quite different from a regular computer with a windowed user interface. Because STBs are intended, in general, to carry one primary video event to a user, there is not much need for separate screen partitions or divisions of the screen area. Consequently, STBs do not normally make provision for dividing the screen, or any other complex video management involving dedicating a portion of the screen to a specific event not related to the primary video datastream.

Furthermore, conventional Internet e-mail accounts that are not sold with STB services are difficult if not impossible to be accessed from a STB 12. Thus, such a conventional STB 10 cannot notify the user of an arrival of an Internet e-mail 32 from a non-STB e-mail account. Additionally, a conventional STB 10 lacks the sophistication necessary to notify the user of the arrival of an Internet e-mail 32 which satisfies user-specified e-mail filter criteria 36.

Finally, when a new STB 10 is added to an ISP 15, it must be initialized. To initialize a STB 10, the STB 10 must be provided with the programming required to allow it to function within the specific ISP 15 to which it is connected and to thereby provide

the services for which the subscriber has paid. Additionally, as the TV provider 14 and its accompanying services evolve, the STB 10 must also evolve to continue providing subscribers with as many of these services as possible. Such an evolution will primarily involve changes to the programming, and perhaps a re-initialization, of the STB 10.

In order to initialize a new STB 10 or upgrade the programming in an existing STB 10, it is preferable to transmit the necessary programming to the STB 10 via the TV provider 14 network. Otherwise, a technician must visit each subscriber to install or upgrade the STB 10. Such field installations and upgrades would obviously be at significant expense. Software that is provided to the population of STBs could be downloaded through the ISP 15, (15), or through the TV provider 14. However, such a download requires that the STB 10 contain some intelligence in order to properly react to and manage such a download. This is because there are many different versions and capabilities of STBs in existence, and it is important to be able to determine which STBs can support which levels of software.

Thus, there is a need for an STB that can notify users of the arrival of certain e-mail messages, where that notification occurs as a result of user-specified filter criteria and that an e-mail account exists outside of the STB arrangement. Also, there is a need for a STB to notify a user of the arrival of such e-mail by using a portion of a TV screen. Finally, because there are many different types of STBs in existence, there is a need for a way of downloading new STB applications that can determine the capabilities of a particular STB so that the appropriate application can be downloaded thereto.

SUMMARY OF THE INVENTION

It is an object of the present invention to meet the above-described needs and others. Specifically, it is an object of the present invention to query and filter e-mails and notify a user of their arrival via a Set Top Box connected to a TV.

To achieve these stated and other objects, the present invention is embodied and described as a software application residing on a STB which queries an e-mail server and notifies a user that an e-mail message fulfilling specific filter criteria has arrived. In a preferred embodiment, the e-mail filtering and notification application resides on a Set Top Box (STB) which is connected between a TV content provider, an Internet provider having an e-mail server, and a TV; a software program resident on the STB which allows a user to specify e-mail filter criteria and notification icons which then retain and store those criteria and icons. The software program preferably includes a querying module which queries the e-mail server to determine whether e-mail fulfilling the user-specified criteria has arrived at the e-mail server, and upon arrival of an e-mail fulfilling the criteria, the application notifies the user by posting the notification icons to the STB.

The application may also either continually or occasionally query the e-mail server, and may run on top of either a multi-tasking or a single-tasking Operating System (O/S). In the single-tasking case, the application remains in memory as a Terminate and Stay Resident (TSR) program and runs intermittently at specifically timed intervals.

The application may also notify the Set Top Box user via an icon on the TV screen, where the notification icon is configurable by the user, and can reflect the content of the targeted e-mail. Alternatively, the application can notify the STB user through the use of a tone generated through the TV speaker, where the tone is configurable by the user, and can reflect the content of the targeted e-mail. The application can also notify the STB user of more than one e-mail messages, where each message satisfies different criteria and has different notification icons.

The application can also query the e-mail server upon power up of the STB, and then immediately notify the user of the existence of e-mails satisfying the user-specified criteria. Alternatively, the application can notify the user by use of a pager rather than through the STB. Also, the application can notify the user of the existence of a telephone call with Caller ID instead of an e-mail message, or can notify the user that another user is attempting to make contact using Instant Messaging.

Furthermore, updated versions of the application can be downloaded to the
STB by said Internet provider, where that downloading of newer versions can distinguish
between different types of STBs.

The application can also be resident on the e-mail server rather than the STB,
or resident on a middle or intermediate server.

The present invention also encompasses the methods of implementing and
operating the application described above. For example, the present invention expressly
includes a method of filtering e-mail messages and notifying a user by   installing a
software program on a STB, wherein the STB is connected both to a TV content provider
and an e-mail server; configuring that program with specific e-mail criteria and
notification symbols; queuing incoming e-mail messages at the e-mail server; querying
the e-mail server as to whether any of the queued messages fulfill the criteria; and
notifying a user that e-mail messages fulfilling the criteria are available on the e-mail
server.

The present invention also encompasses the means of implementing and
operating the application described above. For example, the present invention expressly
includes an e-mail filtering and notification application including a STB, connected
~~amoung~~among a TV content provider, an Internet provider having an e-mail server, and a
TV; user-input means for allowing a user to specify e-mail filter criteria and notification
icons; retaining and storing means for retaining and storing the criteria and icons;
querying means, for querying the e-mail server to determine whether e-mail fulfilling the
user criteria has arrived at the e-mail server; and notification means for notifying the user
of the arrival by posting the notification icons to the STB.

Additional objects, advantages and novel features of the invention will be set
forth in the description which follows or may be learned by those skilled in the art
through reading these materials or practicing the invention. The objects and advantages of
the invention may be achieved through the elements disclosed and recited in the attached

claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings illustrate the present invention and are a part of the specification. Together with the following description, the drawings demonstrate and explain the principles of the present invention.

Fig. 1 is a plan view of a conventional STB connected between a TV and a TV content provider.

Fig. 2 is a plan view of a STB configuration which incorporates Internet services.

Fig. 3 is a plan view of a STB running the software according to the present invention, connected between an e-mail server and a TV content provider.

Fig. 4 is a plan view of the hardware within a STB used with the present invention.

Fig. 5 is a plan view of the software within a STB used with the present invention.

Fig. 6 is an elevational view of a TV screen running the filtering/notification application of the present invention.

Fig. 7 is plan view of the STB running the filtering/notification application of the present invention connected between a TV provider and an e-mail server.

Fig. 8 is plan view of the STB connected to a TV provider and to an e-mail server, where the filtering/notification application of the present invention resides on the

e-mail server.

Fig. 9 is a plan view of the STB connected between a TV provider and a middle server, wherein the middle server is also connected to an e-mail server, where the filtering/notification application of the present invention resides on the middle server.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Using the drawings, the preferred embodiments of the present invention will now be explained.

HARDWARE ARCHITECTURE OF AN STB

Fig. 4 illustrates the hardware layout of a typical STB 10 used with the present invention, including a <u>Central Processing Unit (CPU)</u> 42 and the three different types of memory in an STB 10. These three different types of memory include a read-only memory unit (ROM) 44, a flash memory unit 48, and a random access memory unit (RAM) 54.

The ROM 44 contains the boot code 46 and platform identifier 56. Boot code 46 will be explained in the "Software Architecture of an STB" section below. Many different varieties of STBs exist, with widely varying technical capabilities. Because of this, each STB 10 preferably contains a platform identifier 56 that is specific to the type, architecture and capabilities of that particular STB 10.

A flash memory unit 48 contains the base platform code 50 and the Operating System (O/S) ~~object~~ <u>code</u> 52. The RAM unit 54 can use disc storage or some other type of permanent storage. Downloaded software objects such as the base platform code 50,

the O/S code 52, and so forth may be temporarily stored in the permanent memory or the RAM 54, and then transferred from the RAM 54 to the flash memory unit 48 for longer-term storage. It is advantageous to store the O/S code 52 and applications in the flash memory 48, rather than the disc RAM 54, because the flash memory 48 can be accessed more quickly.

SOFTWARE ARCHITECTURE OF AN STB

As shown in Fig. 5, there are four general tiers or classifications of software that run on or have control of the STB 10 during its different stages in the initialization and operation. The four tiers are the boot code 46, the base platform code 50, the O/S code 52, and the application code 58.

Referring to Fig. 5, the first classification of code is the boot code 46, which resides in the STB 10 preferably in the read-only memory (ROM) 44, and can automatically execute and initialize or re-initialize the STB 10. The boot code 46 and platform identifier 56 58 are shown in both Fig. 4 (STB hardware) and Fig. 5 (STB software) because they are a hybrid combination of the two, perhaps better described as firmware. The boot code 46 will preferably be automatically executed by the central processor 42 of the STB 10. Execution of the boot code 46 may be triggered by and immediately follow connection of power to the STB 10, or can be triggered by the user. The present invention can also require connection to the TV content provider 14 before an execution of the boot code is triggered. While the boot code 46 is executing, no action by the user/installer should be required.

As shown in Fig. 5, the ROM 44 which is factory-installed in the STB 10 will also include a platform identifier 56 that is specific to the type, architecture and capabilities of the STB 10. When running, the boot code 46 will attempt to match software-download information with the platform identifier 56. Thus, the boot code 46

can determine whether a transport stream from either TV provider 14 or the ISP 15 is
appropriately targeted for the correct STB 10.

While running the boot code 46, the STB 10 cannot provide any services to the
subscriber. One function of the boot code 46 is to search the datastream received from the
TV provider 14 to locate, acquire and begin execution of the base platform code 50 which
is the next tier or classification of programming. If the boot code 46 cannot find the base
platform code 50 within the STB storage 48 or 54, the boot code 46 will search the data
transport stream from the provider facility 14 for the base platform code 50.

As will be understood by those skilled in the art, the platform identifier 56 of
the present invention can be used to check any type of code object for its compatibility
with the STB 10. The platform identifier 56 (56) is not limited to use by the boot code 46
only. The platform identifier 56 can also be used by the base platform code 50 to identify
and acquire an O/S code 52 or applications 58 object designed for downloading to a
particular STB 10.

The base platform code 50 has two functions. The first function is to provide
the basic capability of allowing a subscriber to watch programming from the TV provider
14. (14). The second function is to control the download of the next classification of code
objects, i.e., the target O/S code 52, and resident applications 58. The base platform code
50, while allowing subscribers to watch TV programming, does not generally support any
additional functions of the STB 10. However, the base platform code 50 can acquire,
authenticate, authorize and execute objects of the third and fourth classifications of
programming, the O/S code 52 and applications 58.

When the base platform code 50 begins executing, the execution of the boot
code 46 is completed and control of the STB 10 passes to the base platform code 50. The
base platform code 50 may be factory loaded, but is preferably transmitted to the STB 10
from the TV provider 14 during the initialization of the STB 10. This allows the TV
provider 14 to customize the base platform code 50 for optimal operation on the specific

provider system where the STB 10 is deployed.

The O/S code 52 and resident applications 58 provide the additional STB functions available from the TV provider 14, including the filtering/notification application 38 of the present invention. The O/S code 52 can be proprietary software from a third party (such as Microsoft's WinCE™) that provides an interface to the STB used by the resident applications 58. In the present invention, the O/S code 52 can be either of the multi-tasking or single-tasking variety. In the single tasking case, the filtering/notification application 38 can be stored in the STB's flash memory 48, similar to a Terminate-and-Stay-Resident (TSR) program. At scheduled times, the application 38 can be "woken up", where it will then query the e-mail server 40, which holds the actual e-mails as shown in Fig. 3.

The other STB O/S alternative is where the O/S code 52 (52) is a multi-tasking type. In such a case, the filtering/notification application 38 can reside in a memory region assigned by the O/S code 52, and can then request the use of the STB system resources from the O/S code 52. (52). At such time as the request is granted, the application 38 (38) can then query the e-mail server 40.

STB applications 58 are software programs that run on top of, and work with, the STB's O/S code 52 to provide the STB capabilities that accompany the watching of television programming. The e-mail filter/notification program 38 of the present invention is such a STB application.

DETAILS OF E-MAIL SERVER 40

Fig. 3 shows a STB 10 running the e-mail filtering/notification application 38 of the present invention, connected to an e-mail server 40 and also to a TV content provider 14.

The e-mail server 40 can be using IMAP (Internet Message Access Protocol), which is a standard protocol for accessing e-mail on a local server. IMAP (the latest version is IMAP4) is a client/server protocol wherein e-mail is received and held by a user's e-mail server. Using IMAP, an e-mail client such as an STB 10 can view just the heading and the sender of the letter and then decide whether to download the mail to an e-mail client within an Internet workstation 34. An e-mail client within the Internet workstation 34 can create and manipulate folders or mailboxes on the e-mail server 40, or delete e-mail messages. In the present invention, the e-mail client will also be referred to as an Internet workstation 34, and should not be confused with a STB 10.

Another, less sophisticated e-mail protocol is POP3 (Post Office Protocol 3). With POP3, e-mail is saved in a mail box on the server. When a user reads the mail, all of it is immediately downloaded to the Internet workstation 34 and is then deleted from the e-mail server 40.

FUNCTIONS OF FILTERING APPLICATION 38

As shown in Fig. 6, the e-mail filtering/notification application 38 of the present invention can non-intrusively post a notification of appropriately filtered incoming e-mail 32 to the TV screen 12 upon the e-mail message's arrival at the e-mail server 40. The application 38 does so without interfering with or interrupting the TV provider's content 14, and appropriates only a tiny portion of the TV screen 12 merely to blink a user-customized icon 60 and optionally include an additional color or sound to indicate level of urgency. Alternatively, the filtering/notification application 38 of the present invention can attract the attention of the user independently of the STB 10 such as through use of a pager 62.

An additional alternative exists where the filtering/notification application 38 can notify the user of impending Instant Messages, as well as telephone calls utilizing

Caller ID. However, in the remaining portions of this disclosure, the media which are subject to filtering and which then cause notification will be referred to as e-mail messages 32, even though Instant Messages and telephone calls with Caller ID could also trigger user notification.

In all embodiments, the actual e-mail messages 32 themselves do not arrive at and are not viewable from the STB console 10 and TV 12. Instead, as shown in Fig. 7, the e-mails 32, referred to as a queued e-mail message, are staged at the e-mail server 40, where they can then be downloaded to an Internet user's workstation 34. In the first embodiment, the filter criteria 36 designating the types of e-mails of which the user wishes to be notified will reside at the STB 10.

However, the present invention has two other embodiments. The second embodiment has the filtering/notification application 38 residing on the e-mail server 40, not on the STB 10, as shown in Fig. 8. In this embodiment, the user-customized icons are posted to the screen of the TV 12 by the e-mail server 40 instead of by the STB 10.

A third embodiment is one in which the filtering/notification application 38 resides on a middle server 64, located between the STB 10 and the e-mail server 40, as shown in Fig. 9. A middle server 64 is advantageous where the e-mail server 40 is running a POP3 protocol. This is because in a POP3 server, all e-mails 32, even those not fulfilling the filter criteria 36 specified by the user, are downloaded and removed from the e-mail server 40 whenever touched by the client. Thus, a middle server 64 acts as an intermediary to prevent e-mail messages 32 that are touched, but do not fulfill filter criteria 36, from being erased altogether.

In the embodiment in which the user-configured e-mail filtering/notification application 38 resides on the STB 10, the application 38 can poll the e-mail server 40, (40), either continuously or at selected times, querying whether any e-mail messages 32 fulfilling the user's filter criteria 36 have arrived.

How often the application 38 polls the e-mail server 40 depends on the type of connection therebetween. If the connection between the STB 10 and e-mail server 40 is a permanent one such as a DSL or an ISDN, the filtering/notification application 38 can repeatedly query the e-mail server 40 and apply the filter criteria 36 to any messages queued therein. Otherwise, if the connection is an occasional-use type, such as a dial-up connection over POTS (Plain Old Telephone Service), the filtering/notification application 38 can originate a telephone call to the e-mail server 40 at a low call-volume time, such as 2 AM. The filtering/notification application 38 can then apply the filter to any e-mail messages on the e-mail server 40 that are queued up for delivery. Cable modems 16 fit somewhere 'in-between' permanent and occasional STB/e-mail server connections. This is because some cable TV providers 14 are only equipped to transmit data in one direction, from the provider 14 to the user (downstream). These TV providers 14 require a telephone line for any instance where it is necessary to transmit data from the user to the TV provider 14 (upstream). Other cable TV providers 14 are equipped to allow for the movement of data both downstream and upstream without requiring an additional telephone line.

ICONS 60

Regardless of the type of connection, upon receipt of an e-mail message 32 that passes all filter criteria 36, the application 38 begins posting a blinking icon 60 signifying the presence of such an e-mail message (see Fig. 6). In the event the STB 10 is not in use at the time the filter criteria are passed, the filtering/notification application 38 could begin posting a blinking icon 60 or play a sound file whenever the STB 10 is activated by the user.

The user can, when inputting the filter criteria 36, also customize the On-Screen Display (OSD) software 30 to display data or icons 60 related to the subject matter, or play an audible tone or customized sound file. Notification icons 60 could, as

shown in Fig. 6 for example, incorporate the word "Sony" (suggesting e-mail from an employer) or incorporate the word "Tom" (suggesting e-mail from a personal acquaintance).

SETTING UP STB SOFTWARE

There are two distinct phases of programming an STB 10. The first is the initial programming of the STB 10. The second is upgrading the programming or re-initialization of the STB 10 after that STB 10 has been placed in service. This section will discuss the first, initial programming of the STB 10.

The boot code 46 is preferably factory-loaded in the read-only memory (ROM) of the STB 10 and is executed as soon as AC power is provided, but may also be triggered by the user. Whenever executed, the boot code 46 acquires and loads the base platform code 50, which may be obtained from the TV provider 14 or may be factory-loaded along with the boot code 46.

The base platform code then acquires the O/S code 52. The base platform code 50 52 is not limited, however, to acquiring the O/S code 52 and other software objects only when first executed. Additionally, base platform code 50 52 can acquire O/S code 52 while loaded and running. One way this can occur is in response to an initialization message from the TV provider 14.

UPGRADING STB SOFTWARE

As the TV provider 14 and ISP 15 services evolve, the STB 10 configuration must also evolve. This STB evolution will primarily involve changes to the O/S code 52 and applications 58, and perhaps a re-initialization of the STB 10. By upgrading the

software, such as the filtering/notification application 38 described herein, a STB 10 can be made to perform more efficiently or offer new services as the TV provider 14 services evolve.

Additionally, each STB 10 should be periodically re-programmed or upgraded to continue to function optimally within the evolving TV provider 14 network. Each time the programming of an STB 10 is changed, including the filtering/notification application 38 of the present invention, any new code must be appropriate to the architecture and capabilities of that STB 10. The preceding description has been presented only to illustrate and describe the invention. It is not intended to be exhaustive or to limit the invention to any precise form disclosed. Many modifications and variations are possible in light of the above teaching.

The preferred embodiment was chosen and described in order to best explain the principles of the invention and its practical application. The preceding description is intended to enable others skilled in the art to best utilize the invention in various embodiments and with various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the following claims.

ABSTRACT

A software application that filters specific messages from an e-mail server is disclosed. A user specifies filtering criteria within the application, which then detects the arrival of an e-mail fulfilling the specified criteria, and notifies the user accordingly. The notification can consist of blinking an icon on a Set Top Box (STB) TV screen, making an audible sound, or activating a pager. The subject of the filter criteria can be an Instant Message or telephone call using Caller ID, instead of an e-mail message.